

Translation Research in Long-Term Care: Improving Pain Management in Nursing Homes

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ABSTRACT

Background: Pain prevalence in nursing homes remains high, with multiple resident, staff, and physician barriers presenting serious challenges to its improvement.

Aims: The study aims were to (1) develop and test a multifaceted, culturally competent intervention to improve nursing home pain practices; (2) improve staff, resident, and physician knowledge and attitudes about pain and its management; (3) improve actual pain practices in nursing homes; and (4) improve nursing home policies and procedures related to pain.

Methods: A multifaceted, culturally competent intervention was developed and tested in six Colorado nursing homes, with another six nursing homes serving as control sites. Both educational and behavioral change strategies were employed.

Findings: The intervention was successful in improving the percentage of residents reporting constant pain in the treatment homes. Contextual factors (implementation of Medicare's Nursing Home Compare report card) appeared to exert a positive influence on pain documentation. There was no reduction in the percentage of residents reporting pain or reporting moderate/severe pain.

Discussion: Multiple challenges to quality improvement exist in nursing homes. Turnover of nursing staff reduced actual exposure to the intervention, and turnover of directors of nursing influenced constancy of message and overall facility stability. Residents often failed to report their pain, and physicians were reluctant to alter their prescribing practices.

Implications: Any intervention to improve pain management in nursing homes must target explicitly the residents, nursing home staff, and primary care physicians. Implementation strategies need to accommodate the high turnover rates among staff, as well as the changes among the nursing home leadership.

Conclusions: Pain is a complex problem in the nursing home setting. Multiple factors must be considered in both the design and implementation of interventions to improve pain practices and reduce pain prevalence in nursing homes.

Worldviews on Evidence-Based Nursing 2004; 1(S1):S13-S20. Copyright ©2004 Sigma Theta Tau International

KEYWORDS pain, elderly, nursing homes, quality improvement, translation study

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Presented at the U.S. Invitational Conference "Advancing Quality Care Through Translation Research," October 13-14, 2003, at the University of Iowa, Iowa City, Iowa.

This work was supported by Grant U18-HS11093 from the Agency for Healthcare Research and Quality to the School of Nursing, University of Colorado Health Sciences Center (P.I. Katherine Jones)

BACKGROUND AND SIGNIFICANCE

There is growing recognition in the United States that undertreatment of pain is a major, yet avoidable, public health problem (Gordon & Dahl 2004). Pain is a particular problem in nursing homes, where it is frequently underassessed, underreported, and undertreated (Ferrell 1995; Stein & Ferrell 1996; Slyk 1999). Large-scale studies have reported high prevalence rates for pain in the nursing home setting (e.g., AGS 2002), with

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1545-102X/04*

particular groups (those over the age of 85 years, males, non-Whites, and cognitively impaired) at significantly higher risk of undertreatment (Bernabei et al. 1998; Won et al. 1999).

Many barriers exist to effective treatment of pain in nursing homes. Physicians and nurses lack knowledge about current pain practices for the elderly (Mobily & Herr 1996) and often have attitudes and beliefs against the use of strong pain medications (Strong, Ashton & Chant 1992; McCaffery & Ferrell 1997; Parmelee 1997; Brockopp et al. 1998). Residents and family members often have attitudes and beliefs about pain and pain medication that prevent reporting pain or requesting pain medication (Brown & Williams 1995; Ferrell 1996; Davis, Hiemenz & White 2002). Lack of organizational commitment and regulatory concerns also have been cited as barriers to effective pain management (Gordon & Dahl 2004).

Although few studies have focused on quality improvement in nursing homes, multifaceted approaches have been shown to be effective for selected conditions. Stein et al. (2001) have described an educational intervention (structured training session for nursing staff, visits or telephone calls to the primary care physicians, and a clinical algorithm) that successfully reduced inappropriate nonsteroidal anti-inflammatory drug (NSAID) use. Multifaceted interventions have also led to improvement in prescribing of antipsychotic and antibiotic medications (Ray et al. 1993; Avorn & Solomon 2000; Naughton, Mylotte & Tayara 2000).

It has been increasingly recognized that organizational-level variables play an important role in achieving successful clinical practice changes (Castle & Banaszak-Holl 1997). Commitment of the organization's management and leaders is essential to facilitate the process of implementation and overcome barriers (Gerrish, Clayton, Nolan, Parker & Morgan 1999; Currie & Morrell 2001). Nursing home management teams with longer tenures and higher educational levels have been found more likely to engage in innovative behaviors, suggesting that increased tenure and knowledge provide the legitimacy needed to facilitate adoption of innovations (Castle & Banaszak-Hall 1997).

CONCEPTUAL FRAMEWORK

The overall intervention implementation strategy was based on Rogers' (1995) Theory of Diffusion of Innovation. Diffusion is the process by which an innovation, such as pain clinical practice guidelines, is communicated through channels, over time, among members of a social system. Factors influencing success of the innovation are the characteristics of the innovation, the methods of communication, characteristics of users of the innovation, and

characteristics of the social system. Characteristics of the innovation included detailed assessment protocols and more aggressive approaches to pain management. Methods of communicating the innovation included written materials, videotapes with case studies, and role modeling. The users of the innovation were nursing home staff and primary care physicians. Nursing homes are staffed primarily by unlicensed personnel who frequently are unable to read or speak English. Staff turnover rates are high at all levels. Primary care physicians typically care for very few nursing home residents and are physically remote from the nursing home. The social system of nursing homes reflects a hierarchical structure that emphasizes regulations and governmental mandates. The complexity of the pain innovation, presence of pre-existing attitudes and beliefs about pain and its management, high staff turnover and low skill mix, and regulatory environment imposed severe challenges to our ability to improve pain practices.

Additional theories guided our selection of specific intervention strategies. Educational theory states that practice changes are driven by the desire to learn and be professionally competent. It is believed that physicians and nurses would value the most current information and resources on pain assessment and management in the elderly. Behavioral theory states that change occurs under the influence of external factors, such as incentives and sanctions. Therefore, periodic feedback reports were built in based on staff survey results and resident pain assessments. Social influence theory states that the social group plays an important role in influencing the clinician's decision to adopt a desired change. Consequently, local opinion leaders were used to recruit physicians to the continuing medical education seminar, and a nomination process was used for selecting the certified nursing assistant (CNA) for an internal pain team (IPT).

STUDY DESIGN AND METHODS

To address the problem of inadequate pain management in nursing homes, an intervention study was designed and tested under the Agency for Healthcare Research and Quality (AHRQ) Translating Research into Practice (TRIP)-II initiative. The aims of the study were to:

- develop a multifaceted, culturally competent intervention to improve pain management in nursing homes;
- improve nursing home staff, physician, and resident/family knowledge and attitudes about pain management;
- improve actual nursing home pain practices; and
- improve nursing home policies and procedures related to pain management.

A multifaceted educational and behavioral intervention was developed and implemented in 12 nursing homes in one state. Six of the nursing homes received the intervention, and six served as control sites. Half of the treatment homes were rural and half were urban. The primary target audience for the pain intervention was staff members, including nursing assistants, licensed practical nurses (LPNs), registered nurses (RNs), and others (therapists, social workers). Secondary targets for the intervention were residents and families and the physicians providing primary care services to residents.

Educational Component

Four 30-minute, interactive educational sessions were developed and delivered to the nursing home staff members over a 6-month period.

- Session 1: an overview of the pain problem and pain assessment techniques.
- Session 2: a review of pharmacologic management of pain in the elderly.
- Session 3: an exploration of communication issues related to pain management within the nursing home.
- Session 4: an integrative class, using two pain case studies from the training video scripted and produced by the research team.

All staff members were encouraged to attend sessions 1, 3, and 4, while RNs and LPNs were strongly encouraged to attend session 2. However, all sessions were open to any nursing home staff and students training within the facility.

The training sessions were scheduled on a day selected by each nursing home and repeated throughout the day at times selected by nursing home leadership. Most training days began at 6 or 7 AM in the morning, and ended at 2 or 3 PM in the afternoon to facilitate attendance by staff working in all shifts. The research team also provided a series of additional sessions to each treatment home to allow new staff and staff members unable to attend the regularly scheduled sessions to complete the classes.

The research team compiled a comprehensive pain resource binder for each study nursing home, consisting of the American Geriatrics Society (AGS 1998) and American Medical Directors Association (AMDA 1999) pain guidelines, selected reprints, drug equi-analgesic charts (establishing equivalent doses across medications), pain assessment and treatment tools, Joint Commission on Accreditation of Healthcare Organizations (JCAHO) pain standards, selected videos and CD-ROMS, and lists of relevant Web sites and other resources. A 7-minute resident educational video was produced and provided to each treatment nursing home for use with residents and family members during the admission process. A pain pamphlet

(available in English and Spanish) to accompany the video was also developed. A 45-minute physician continuing medical education (CME) seminar, developed by the team geriatrician and nurse-pharmacologist, was offered to physicians caring for residents in each of the six treatment nursing homes. CME credits were offered, as well as a malpractice insurance premium discount, food, and printed material.

Behavioral Component

The primary behavioral strategy was the formation of a 3-member internal pain team (IPT), which was to work closely with the study investigators and function as change agents within their respective nursing homes. A CNA and a medication LPN were to be team members, along with a third member selected by the nursing home. It was expected that the nursing home would appoint an RN as the third member, but actual appointments included social workers and restorative aides. The internal pain team was responsible for the development of a pain vital sign assessment and documentation method. The research team scheduled five site visits with the IPT and provided feedback reports, new sets of factoids, new material for the pain binders, and guidance on the pain vital sign. The pain expert also conducted pain rounds, consulted on difficult cases, and provided make-up educational sessions during these visits.

Instruments Used to Measure Uptake of the Pain Intervention

Both qualitative and quantitative methods were used to measure how successful the intervention was in improving pain practices within the nursing homes. Staff knowledge and attitudes were assessed prior to and after the intervention period. Resident pain reports and staff pain documentation were assessed quarterly: three assessments were completed prior to intervention implementation; three assessments were conducted during intervention implementation; and three were done after intervention implementation. The staff evaluation focused on knowledge, attitudes, and barriers to effective pain practices. The resident interviews and chart reviews focused on pain practices with the nursing homes.

Staff Pain Survey

A written pain survey (Jones et al. in press) was administered to a convenience sample of staff during a scheduled nursing home staff meeting. The surveys were anonymous but contained a respondent-generated code that would allow matching pre- and postintervention surveys. Consent forms were included and signed by the staff. The survey questions were modifications of items on the University

of Wisconsin Pain Survey (City of Hope 2002) and City of Hope Nurses' Knowledge and Attitudes questionnaire (City of Hope 2002). A shorter version of the pain survey was developed just for unlicensed staff. Internal consistency reliabilities for the true/false section, using KR-20 reliabilities, were 0.61 and 0.70 for the licensed and unlicensed versions, respectively (Jones et al. in press). Cronbach's alpha reliability for the attitude questions was 0.70 and for the barriers scale was 0.93 (Jones et al. in press).

Staff Focus Groups

Details about the focus group methodology are contained in Clark, Jones & Pennington (in press). Prior to the intervention implementation, focus groups were conducted to gather detailed information about pain practices, knowledge and beliefs, perceived barriers, and preferred ways of acquiring new knowledge. Separate focus groups were held for the nursing assistants when possible (Clark et al. in press).

Staff Interviews

Funded by a minority supplement to the grant, 120 structured interviews with 60 staff members and 60 residents were conducted in four urban nursing homes. The purpose of these interviews was to examine more closely the cultural aspects of reporting and responding to pain reports in the nursing home. In addition, structured interviews of selected staff members were conducted at the end of the study. Up to 10 interviews were held per nursing home, with the key informants being the director of nursing, nursing home administrator, staff development coordinator, restorative aide, other nursing assistants, LPNs, and RNs.

Resident Interviews/Observations

Each quarter, a 20% sample of residents was interviewed and observed for signs of pain by the research assistants (after providing signed consent), and their medical records were reviewed for pain-related information. The research team modified the Quick Pain Assessment for use with elderly in the nursing home setting. Those unable to respond were included in the sample (if consent was provided by their legal guardians) and observed for signs of pain. Data were abstracted from the medical record on pain assessment and reassessment by nurses and primary care providers, pharmacologic and nonpharmacologic management, side effects and adverse events, and selected resident assessment instrument (RAI) minimum dataset (MDS) items.

Nested factorial ANOVAs and generalized linear models (GLM) with generalized estimating equations (GEE) were used to evaluate staff and resident outcomes. This approach acknowledges the fact that respondents are not truly

independent of each other. Staff members and residents are instead clustered within individual nursing homes, which are either receiving the intervention or serving as controls. Independent variables included group (experimental/control), job title (RN, LPN, CNA), and time (baseline/postintervention).

STUDY RESULTS

Staff Knowledge, Attitudes, and Barriers

A detailed description of the analysis of the staff surveys can be found in Jones et al. (in press). Significant staff knowledge deficits about pain and its management were displayed in the pre-intervention time period, particularly in the areas of nonpharmacologic management; safe and effective dosing levels; appropriate choice of laxatives; and differences among addiction, tolerance, and dependence. The intervention was only partially successful in improving staff knowledge over time. Staff attitudes changed little, with CNAs more likely to hold negative attitudes than licensed staff. There was a significant decline in perceived barriers to effective pain management across all study homes, perhaps reflecting changes in the nursing home environment. The case study results showed nurse filtering of resident pain reports based on observed behaviors and reluctance to treat pain aggressively, regardless of pain intensity level. The difficulty in achieving significant improvements in staff knowledge and attitudes can be attributed in part to high staff turnover and limited exposure to the intervention (only 43 out of 628 respondents completed the survey more than once). In focus groups (Clark et al. in press), staff discussed the ambiguities of pain assessment and the pain experience of the elderly. Staff members reflected that they rely on visual and behavioral cues to formulate their pain assessments rather than formal pain assessment tools. Cues to the presence of pain were based on their long-standing relationship with the resident and how they understood the resident's usual behaviors. Pain assessment protocols were considered regulatory in nature and not well-suited to the nursing home setting. Staff also believed that physicians were critical to addressing pain needs of the residents. Several communication issues were identified, including nursing assistants' perceptions that their contributions were minimized or ignored by the nursing staff.

Nursing Home Pain Practices

The primary outcomes measured for pain practices were percentage of residents: reporting pain (yes/no), reporting constant pain (yes/no), reporting moderate or severe pain (yes/no), with a non-MDS pain assessment (yes/no), and with a pain reassessment (yes/no). Data were collected from 2,033 residents in the 12 study facilities. However,

residents from one treatment nursing home ($n = 134$) were omitted from analysis because the facility experienced major upheavals throughout the course of the study and did not complete the intervention. Chi-square and logistic regression (with GEE) analyses were used to examine differences related to group (intervention/control) and study phase (baseline/implementation/sustainability).

The intervention was partially successful in changing pain practices in the experimental nursing homes. Contextual factors including the implementation of the Medicare Nursing Home Report Card appeared to improve other pain outcomes. Results can be summarized as follows:

- 1) There was no significant reduction in percent of residents in treatment homes reporting pain over the three phases of the study (57%, 61%, 60%, respectively).
- 2) There was a significant ($p \leq 0.001$) decrease over the three phases of the study in the percentage of residents reporting constant pain in the treatment homes (53%, 37%, 35%, respectively). Overall, residents in the implementation phase were 35% less likely to report constant pain than residents in the baseline phase ($p = 0.008$). Residents in the sustainability phase were 42% less likely to report constant pain than residents in the baseline phase ($p = 0.0006$).
- 3) There was no significant reduction over the three phases of the study in percentage of residents in treatment homes reporting moderate/severe pain now (30%, 23%, 26%) or in the last 24 hours (46%, 44%, 46%).
- 4) Both treatment (64%, 81%, 92%) and control (64%, 86%, 94%) homes showed significant improvement ($p < 0.001$) in non-MDS pain assessments over the three phases of the study. Overall, residents in the baseline phase were 64% less likely to have a non-MDS pain assessment than were residents in the implementation phase ($p < 0.0001$). Residents in the baseline phase were 87% less likely to have a non-MDS pain assessment than were residents in the sustainability phase ($p < 0.0001$). Residents in the implementation phase were 62% less likely to have a non-MDS pain assessment than were residents in the sustainability phase ($p < 0.0001$).
- 5) Both treatment (38%, 46%, 44%) and control (27%, 47%, 53%) homes showed significant improvement ($p < 0.05$) in pain reassessments over the three phases of the study.

STUDY CHALLENGES

Several challenges occurred during the implementation phase of the study. A number of modifications had to be made in order to enhance the translation

strategies being used. The challenges and alterations were as follows:

- *Hoarding of comprehensive pain resource binders:* The comprehensive pain resource binders were viewed as a valuable resource by the nursing leadership and, thus, were often locked in an office rather than placed on the nursing units. Many staff members were intimidated by the large size of the binder. Mini-resource binders containing only key pain management information were compiled and placed on each nursing unit and in the staff break room. A separate mini-resource binder aimed specifically at nursing assistants was developed and placed in the same locations.
- *Staff attendance and turnover at educational sessions:* Although only four pain sessions were scheduled over a 6-month period, attendance quickly deteriorated after the first session. Nursing homes usually made the first session mandatory for staff, but the remaining sessions required the staff to come in early or stay late or get relieved for a short period of time on the nursing care unit. Several nursing homes sent subtle messages to their staff members that attendance was not a priority to them, so various incentives of food, small rewards like specially designed pins, and door prizes, as well as personal recruitment on the units, were not successful in getting staff members to attend the sessions. Short staffing also prevented attendance at the scheduled sessions. Moreover, it was not uncommon for a completely new group of staff to be at subsequent educational sessions, reflecting the high turnover rates in nursing homes. To facilitate provision of the educational content to a greater number of staff, the research team produced videotapes of the first three educational sessions, allowing nursing homes to present the material to staff at their own convenience. During the study period, the team pain specialist continued to do the final session using the integrative pain case studies on the video.
- *Retention of key information:* The amount of material contained in the resource binders and educational sessions was extensive and perhaps overwhelming to the nursing home staff members. For this reason, the investigators decided that key elements of pain assessment and management had to be identified and transmitted in a more effective manner. Pain "factoids" (single facts related to assessment, management, and communication) were extracted from the AGS Guideline for Chronic Pain, placed on colored paper, illustrated, and posted every 5 weeks in visible locations at each nursing home by IPT members.
- *Lack of change agents on internal pain teams:* It became apparent after the first IPT meetings that the members did not have the authority necessary to make changes

in policies and practices to improve pain management. The IPT was then expanded to include the director of nursing and staff development coordinator, individuals with the authority to implement any recommended changes. The medical director and administrator were also invited to attend the meetings.

- *Nursing home staff-primary physician communication issues:* There was very little use of opioids or round-the-clock dosing for persistent pain. Staff would often relate stories of difficult pain cases, many of which occurred during periods of transition between the nursing home and the hospital. A preprinted pain fax form was designed and supplied to each nursing home to facilitate communication about resident needs with the physicians. Essential areas of assessment and management were outlined to prepare nurses to convey pertinent information and respond to questions from the primary care physician. Communication barriers persisted in some nursing homes, ranging from inability to speak directly with the physician to indignation that nurses would presume to advise the physician on appropriate medications to prescribe.
- *Physician attendance at continuing medical education seminar:* Multiple strategies were used to encourage attendance at the physician pain seminar. A local opinion leader was identified and asked to work with the research team in recruiting physicians to the seminar. Written invitations were sent and personal phone calls were made to each physician. Reminder phone calls were placed to each physician's office 48 hours prior to the meeting. The session was held at the time and location selected by the physician groups and included food and other incentives. The physician seminar was short and interactive, using a case approach. In spite of the many incentives, very few physicians attended the sessions.
- *Nursing home leadership turnover:* Turnover among administrators, directors of nursing, and staff development coordinators was also high. The research team was constantly re-orienting the leadership to the study. Key contact people were often replaced, seriously undermining the momentum of the study. Lack of stability in some nursing homes made sustained commitment to the study and to improving pain management difficult. In addition to turnover, there existed varying levels of commitment to and involvement in the pain study by nursing home leadership. In the best case scenario, leadership took an active role in recruiting staff to attend educational sessions, provided staffing relief to allow attendance, posted meeting schedules, and sent consistent messages to the staff that this was a priority. At the other end of the spectrum, the leadership itself did not attend the educational sessions, did

not complete the pain surveys, did not facilitate attendance, and sent subtle messages to the staff that the study was not important to them and was optional for the staff. The effect of these differences was reflected in the outcomes of the study.

DISCUSSION

Pain is a complex problem in the nursing home and requires a multifaceted intervention directed at all key stakeholders. The tools for quality improvement are available—clinical practice guidelines, standardized assessments, training workbooks, and videos. However, the ideal process for achieving evidence-based practice in the nursing home is not yet known. Numerous educational strategies have been used to improve pain management, including role model programs (Weissman, Griffie, Gordon & Dahl 1997), clinical preceptorships (Pasero, Gordon, McCaffery & Ferrell 1999), and clinical practice guidelines (AGS 1998, 2002), with little effect on actual clinical practice (Gordon & Dahl 2004). The literature on successful translation research strategies is growing but contains relatively little information about achieving practice changes in long-term care. The nursing home environment is unlike other health care settings, being heavily regulated, staffed by primarily unlicensed personnel, and lacking a strong physician presence. These differences call for unique strategies and approaches to improving clinical practice. This study attempted to improve pain practices in nursing homes by using a multifaceted intervention containing both educational and behavioral components. Several challenges were faced in the course of the implementation of the intervention. The lessons learned in this study will be useful to others as they develop interventions to improve the quality of nursing home care. These lessons can be grouped into the following categories:

- Administrative commitment, involvement, and leadership ability are essential (organizational, administrative level interventions).
- Administrative and staff turnover interferes with sustained engagement in the change process.
- Limited organizational capacity in terms of staff and resources prevent major investments in the quality improvement process.
- Both direct caregivers and clinical supervisors need to function as change agents in a quality improvement program.
- Educational content must be simplified and condensed into key aspects of care that will improve resident outcomes; reading level should be 6th grade or lower; Spanish translations might be helpful for unlicensed staff.

- Physician engagement is necessary; educational outreach (academic detailing) may be more successful in influencing physician prescribing practices (Soumerai & Avorn 1990).

The quality improvement process for pain management requires a more efficient approach that adjusts for the high turnover rates of staff and administrators in the nursing home. A possible alternative is use of quality collaboratives (Cretin, Farley, Dolter & Nicholas 2001). Carefully selected teams from the nursing homes would come together in a central location and learn from both content and process experts and from each other. Specific individuals from within each nursing home would be designated as “pain champions”—an ideal situation would include a physician agreeing to serve as one of the pain champions. The teams would be responsible for bringing the content back to their nursing homes, setting up training sessions for the staff, and auditing their own results.

IMPLICATIONS FOR EDUCATION, PRACTICE, AND PUBLIC POLICY

There were substantial knowledge gaps and suboptimal attitudes and beliefs about pain and its management demonstrated by nursing home staff. Pharmacologic knowledge was particularly weak. This content area needs to be expanded in medical and nursing school curricula and to receive added emphasis in licensing and certifying exams, with special emphasis on gero-pharmacology. There was almost no use of nonpharmacologic interventions, such as heat and cold, massage, positioning, and various distraction techniques. Nursing assistants could play an active role in pain management by understanding how simple techniques can effectively reduce pain and discomfort. Basic pain assessment and nonpharmacologic treatments should be added to the CNA curriculum. Nursing home staff and primary care physicians need to base their pain practices on current evidence-based clinical practice guidelines (AGS 1998, 2002; AMDA 1999). Educational programs need to concentrate on the development of effective intradisciplinary and interdisciplinary communication strategies. Nursing assistants need to be recognized as an essential part of the caregiving team.

Nursing homes must make a commitment to effective pain management. Pain assessment needs to be the “5th vital sign,” assessed and documented on a weekly basis. Standardized tools need to be readily available to assess pain intensity, location, duration, and aggravating/alleviating factors. Efforts should be made to assign staff to the same residents—to allow for continuity in assessment and management. All direct caregivers should be

considered as part of the nursing team, and their input should be elicited for care-planning purposes.

The advent of the Medicare Nursing Home Compare public reporting initiative by the Centers for Medicare and Medicaid Services (CMS) served to focus attention on the quality of pain management in nursing homes, since two of the nine measures relate to pain. There was evidence in our study that nursing homes might have perceived lower barriers to effective pain management due to major initiatives by CMS, JCAHO, AMDA, and other entities. It is important that data be collected related to management of pain, not just the assessment of pain by staff. The tools developed by the research team in this study are available to assist individual nursing homes, state quality improvement organizations, and others working with nursing homes to improve their pain practices. Two specific areas require policy attention. One is the need to improve the nursing home work environment, to make it more attractive to staff at all levels. The other is the need to develop leadership programs for nursing home administrators, directors of nursing, and staff development coordinators. Improved stabilization of the nursing home environment would facilitate successful quality improvement initiatives and ultimately better quality of care and quality of life for the residents. It would also improve the quality of work life for the staff.

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